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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/636,237	08/10/2000	Antoine Berthet	28944/36657	6959

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GARDNER CARTON & DOUGLAS LLP  
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191 N. WACKER DRIVE, SUITE 3700  
CHICAGO, IL 60606

EXAMINER

CORRIELUS, JEAN B

ART UNIT	PAPER NUMBER
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2631

DATE MAILED: 03/08/2004

9

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/636,237

**Applicant(s)**

BERTHET ET AL.

**Examiner**

Jean B Corrielus

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 August 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-5,10 and 12-15 is/are rejected.
- 7) ☒ Claim(s) 2,6-9,11 and 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date Z.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Abstract Of the disclosure*

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to **a single paragraph** on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

### *Specification*

#### **Arrangement of the Specification**

2. As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or  
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.

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- (1) Field of the Invention.
- (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.
- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

### ***Claim Objections***

3. Claims 1-16 are objected to because of the following informalities: proper definite article needs to be inserted, in line 1, before the first word of each claim 2-16. For instance claim 2, line 1, before method, "A" can be inserted. As per claim 1, line 3, "these" needs to be replaced by "the/said"; line 7, "it consists of" needs to be replaced by "said method comprising the steps of"; line 9, "the " needs to be deleted; lines 14, 16 and 18, "the" needs to be deleted, respectively. Claim 2, line 3, 4, 7, "the" needs to be deleted; line 9, "said" needs to be deleted. Claim 3 what does it mean by "EM process". claim 6, line 7, "it additionally consists of" needs to be replaced by "said method further comprising the steps of". Claim 7, line 2, "steps" should be "step". Claim 7, line 4, "them" needs to be replaced by its proper term. Claim 8, line 7, "the" needs to be deleted. Claim 9, line 5, "EM" needs to be expanded. In addition, "." Needs to be inserted. The same comments apply equally to respective one of apparatus claims 10-16, where similar limitations are recited. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitra et al US Patent No. 5,533,063 in view of Lee US Patent No. 6,570,919.

Mitra et al discloses a method and apparatus (fig. 15A) comprising means 52 for running an initial linear estimation of the coefficients of the impulse response of the transmission channel on the basis of the specific learning symbols transmitted see fig. 15A; elements 48 and 50 for subjecting equalization and decoding process and providing equalized signal to the decoder 50; running an updated estimation coefficient in element 54 on the basis of the equalized signal and the decoded signal. However, Mitra et al does not explicitly teach the decoded information is passed directly to the equalizer in an iterative manner. In the same field of endeavor, Lee teaches fig 2 a system in which an equalized signal is provided to a decoder 201 and a decoded signal is provided to an equalizer 202 in an iterative manner. It would have been obvious to one skill in the art to incorporate such a teaching in Mitra et al in order to reduce error rate of the data provided by the decoder and improving the signal to noise ratio.

6. Claims 3 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitra et al US Patent No. 5,533,063 in view of Lee US Patent No. 6,570,919 further in view of Seshadri US patent No. 5,263,033.

As applied to claim 1 above, Mitra et al and Lee disclose the invention substantially as claimed but does not teach specifically that the equalization process is a Viterbi SISO MLSE equalization process with weighted inputs coupled with a re-estimation by an iterative process.

In the same field of endeavor, Seshadri teaches that the equalization process is a Viterbi SISO MLSE equalization process with weighted inputs coupled with a re-estimation by an iterative process see fig. 5 and col. 4, line 10-col. 6, line 22. it would have been obvious to one skilled in the art at the time of the invention to incorporate such a teaching in Mitra et al and Lee so as to produce a pattern which is most likely to be close to the received pattern see col. 4, lines 20-22.

As per claim 13, it would have been obvious to one skill in the art to implement the decoding element as BCJR decoding in order to improve signal detection.

7. Claims 4, 5, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitra et al US Patent No. 5,533,063 in view of Lee US Patent No. 6,570,919 further in view of applicant's background of the invention page 2.

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As applied to claim 1 above, Mitra et al and Lee disclose the invention substantially as claimed but does not teach specifically the use of DDFSE process weighted outputs coupled with a re-estimation of the bootstrap type. It would have been obvious to one skill in the art at the time of the invention to incorporate such a teaching in Miltra et al and Lee in order to place the estimated transmission channel in minimum phase.

As per claims 14 and 15 , it would have been obvious to one skill in the art to implement the decoding element as BCJR decoding in order to improve signal detection.

As per claim 5, applicant background of the invention teaches a GSOVA coupled with a re-estimation of the bootstrap type. See page 3. Given that, it would have been obvious to one skill in the art at the time of the invention to incorporate such a teaching in Mitra et al and Lee in order to improve signal detection.

***Allowable Subject Matter***

8. Claims 2, 6-9, 11 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**9. Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to:**

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(703) 872-9314


(for informal or draft communications, please label "PROPOSED"  
or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,  
Arlington, VA., Sixth Floor (Receptionist).

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B. Corrielus whose telephone number is (703) 305-4023. The examiner can normally be reached on Monday-Thursday from 7:00 A.M. to 5:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour, can be reached on (703) 306-3034.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3800.

  
Jean B. Corrielus  
Primary Examiner  
TC-2600 2/28/04